

IDG 131001  
C-4

**BEST MANAGEMENT PRACTICES PLAN  
For  
Cabinet Gorge Hatchery**

DEC 28 22 2017

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**Updated 11/22/2017**

**Goal**

The purpose of this document is to describe the standard operating procedures and best management practices used to minimize, collect, and dispose of pollutants generated during facility operations at the Cabinet Gorge Hatchery.

**Description**

Cabinet Gorge Hatchery is a Class A aquaculture facility that produces kokanee salmon and westslope cutthroat trout annually. Occasionally other species are reared if space is available. The facility was constructed in 1985 and went into production in 1986. This facility was originally constructed to rear 20 million (20,000 lbs.) 1.5 inch kokanee fry for Lake Pend Oreille enhancement. The kokanee rearing goals were modified in 1994 to produce a maximum of 16 million two inch kokanee fry (38,000 lbs.). The facility was expanded in 2007 – 2008 to include two 5 x 5 x 18.5 foot raceways and two 7 x 5 x 18.5 foot raceways for rearing westslope cutthroat broodstock (five year classes). The expansion project also includes a 14 x 20 foot steel building to house ten (8 tray) stacks of vertical flow incubators. This hatchery expansion will add an additional 10,000 to 15,000 pounds to current production levels. Five year classes of westslope cutthroat broodstock, and westslope cutthroat fingerlings would comprise the additional production program. Cabinet Gorge Hatchery utilizes a Full-Flow Settling Pond/Basin measuring 80 x 5 x 100 feet (40,000 cubic feet) (A on Figure 1).

The hatchery facility is physically located at the old town site of Cabinet, Idaho. It is approximately eight miles Southeast of the community of Clark Fork, Idaho (T 55N, R 3E, Sec. 28). The facility is situated on Avista Utility property and has a non consumptive water right for 26.2 cfs. There are two hatchery water discharge points: both of which empty into the Clark Fork River. Cabinet Gorge Hatchery is an Idaho Department of Fish and Game facility and is monitored under the general permit NPDES number IDG131001.

**Water Source**

The Cabinet Gorge Dam is located about one mile upstream from the hatchery. After its completion in 1952, artesian springs began appearing along the Clark Fork River at the present site of the hatchery. The Cabinet Gorge Hatchery water supply consists of approximately 5.4 cubic feet per second (cfs) from a spring and approximately 20-cfs from a well field. The temperatures of the lower spring and upper well field vary inversely with each other over a 12-month period of time. The cooler water from the lower springs (pump #7 and #8) is utilized for the entire kokanee

incubation and early rearing period. Incubation and early-rearing water temperatures is maintained around 49 to 50 degrees Fahrenheit (F) (range 43.0 degrees F to 52.0 degrees F). Production water ranges from 38.0 degrees F to 46.0 degrees F.

The hatchery utilizes six pumps to move water to a common head-box. The head-box is divided into upper and lower sections by a series of five or six- eight inch dam boards placed into a keyway separating the two. This is the location where the "intake" water sample is taken for the monthly DMR.

### **Rearing Facilities**

The rearing facilities at the hatchery include 128 upwelling incubators and 64 concrete raceways. The incubators are 12 inches in diameter by 24 inches high with a maximum capacity of 150,000 kokanee eggs each. The 64 (4 x 4 x 52 foot long) concrete raceways receive water from the head-box via two inch and four inch pvc pipelines. Maximum water usage is 230 gallons per minute (gpm) per raceway. The 40 x 225 foot hatchery building encloses approximately one-third of each raceway. Three sets of keyways are located at 11 feet, 13 feet, and 50 feet. Dam boards and fish screens go into these keyways. Placement depends on the number and size of fish being reared. This setup enables the newly hatched fry to be reared inside the building for the first month of rearing. Later the raceways can be extended to full length with a fish retention screen (tail-screen) in the last keyway. The raceway drain consists of a six inch opening in the concrete floor where a 30 inch tall pvc standpipe is inserted. Total volume for each raceway (at full extension) is 485 cubic feet. At this time, the dam boards in the second keyway are inverted to provide a two inch gap at the bottom (baffle-boards). In addition three to five polyethylene baffles are installed downstream and upstream of the baffle boards. These are spaced four feet apart with 2 inch gaps at the bottom and are set in place at a 72 degree angle to facilitate waste removal. The baffles also provide water velocity variance which provides resting and exercise areas which promote better fish health and less feed waste. Use of an incandescent rheostat and utilization of baffles (which create shadows), reduces fish stress levels and promotes good fish health. There is a two foot quiescent zone (QZ) at the end of each raceway behind the tail-screen.

The four cutthroat raceways (brood ponds) are five to seven feet wide and eighteen and a half feet long. Water depth is four feet deep. There are two sets of keyways eight and sixteen feet below the pvc intake lines which will separate fish within the raceway and hold the tail-screens. Fish care and cleaning is similar to the 64 kokanee rearing raceways. These raceways were completed in 2008.

### **Full Flow Settling Basin**

All raceways drain into the hatchery diversion box via 18 inch (cutthroat ponds) or 36 inch (kokanee raceways) drain lines. This 11 x 13 x 10 foot deep concrete box was designed as a dual purpose effluent water distribution and fish release diversion structure. The box is bisected east to west by a 2 x 10 x 4 foot tall concrete pedestal with four sets of 4 foot keyways. On the North side of this pedestal is a 4.5 x 10 x 4 foot deep channel where the waste water comes in. At the end of this channel is a twelve inch gate valve which originally was used to release kokanee fry directly into the hatchery ladder. This valve is closed and is no longer used for this purpose. The wastewater

flows into the box, fills up the channel to a pre-determined level (regulated by dam boards placed in the keyways). The water then spills over into a 5.75 x 10 x 4 foot deep channel which in turn enters the 80 x 100 foot hatchery settling basin via a 3 foot pipeline located under the upper end of the pond. (Figure 2)

The waste water enters the settling basin via five separate upwellers which distribute the flow across the 80 foot width of the pond. At the end of the 100 foot long basin is another concrete box with four sets of keyways with screens and/or dam boards. This is where the "effluent out" sample and sharp crested weir flow measurements are taken (See QAP). The water then exits the pond into the Clark Fork River. There are two possible discharge points in the river. The main, and most frequently utilized; discharge consists of a 24 inch line located adjacent to and terminating approximately forty feet downstream of the settling basin. (X on Figure 1, Figure 3) The second discharge point consists of a pipeline from the settling basin to the adult holding ponds and into the hatchery ladder. (Figure 3) There is no Off-Line Settling Basin (OLSB) at this facility.

Any equipment that is used to control the discharge of floating, suspended, or submerged matter must be cleaned and maintained at a frequency sufficient to prevent overflow or bypass of the full flow settling basin.

## **OPERATION**

### **Feeding**

Most fish feed management is accomplished by hand feeding six to eight times per day during the fry stage of rearing. Maximum feed amounts are 15 pounds per raceway. This occurs during the peak loading months of May and June. Cabinet Gorge Hatchery utilizes commercial semi-floating dry diet fish feeds.

Bagged feeds are stored in the feed storage building or in the walk-in freezer in the shop area. Current diets do not need to be kept frozen or refrigerated. All feeds are used on a "first in, first out basis" to prevent lengthy storage of feed. Feed quality is closely monitored and employees are instructed to observe feeding behavior of fish at all times. Fish that are not feeding well will have their feed amounts/intervals reduced until they are again feeding and behaving normally. This will prevent feed from being wasted and discharged with the waste water. Growth rates are monitored bi-weekly and feeding rates and water flows are adjusted accordingly.

A maximum of 40,000 pounds of feed is fed to the kokanee fry at a 0.8 : 1.0 conversion rate. The cutthroat broodstock feed conversion is 1.2 : 1. This would indicate that less than 10,000 pounds of feed would be required to rear five year classes of cutthroat for production and broodstock purposes. Two feed company products are utilized at this facility (Rangen and Bio-Oregon feeds). Current feed composition is about 10-12 % ash, 14-20 % fat, and 1.0-1.7 % phosphorous. Phosphate levels are monitored biannually during the months of June, and December.



## **Containment of Live Fish**

Live fish are contained by the use of tail-screens placed into the last keyways below the fish in each raceway. Screen size is adjusted for the size of the fish contained. This prevents hatchery reared fish from entering hatchery discharge waters. If fish have entered the quiescent zones or basins, they are removed as quickly as practicable.

## **Mortality**

Cabinet Gorge Hatchery is basically a disease free (Class A) fish rearing facility. Mortality rates are minimal (1-5 % during feeding). The water is virtually free of disease organisms and biosolids. All fish mortalities are disposed of daily during raceway cleaning. Dead fish are collected in a designated mortality bucket and disposed of in the trash and/or frozen before hauling to the dump. If excessive and/or diseased fish mortalities are encountered, a mortality pit/trench is utilized to bury the carcasses.

The location of the temporary pit is located approximately 100 feet above and downstream of the settling basin, and 200 yards from the nearest well. Area soil is comprised of glacio-fluvial deposits of silt, sand, gravel, cobbles and boulders. These deposits can be more than 100 feet thick. Typically the layering is four to six inches of topsoil, two to three feet of loose sand, then coarser sand with gravel- cobbles- and boulders on top of layered bedrock shelves. The original pit trench was dug by a backhoe and was 20 feet long and eight feet deep. Depth to ground water at this facility is sixty feet. When mortality pit use is necessary, slaked lime is applied routinely to prevent odors and aide in carcass decomposition.

## **Chemical Storage, Spill Prevention and Response**

All drugs, disinfectants, and chemicals used at the facility are used in a manner consistent with label directions (FIFRA or FDA). All drugs, disinfectants, and chemicals are stored under the stairs in the shop area just outside of the office hallway in their original containers. This area is well ventilated, away from water with no floor drains. Material Safety data sheets for all chemicals used at the facility are kept in a binder on a shelf located above the chemical storage area under the stairwell. Treatments are only made up for the amount necessary for immediate use. Records are kept as required by the NPDES permit for all drug and chemical usage, including the use of medicated diets. Medicated diets are stored away from normal diets and used as recommended.

Chemical usage is recorded on the annual chemical log sheet located in the hatchery office. At the end of the year, this data is reported in the NPDES Annual Report as maximum concentration estimated in parts per billion (ppb). Utilizing flow through treatment calculation (Piper, et.al.).

$$\text{ppm} = \text{weight of chemical} \div (\text{inflow} \times \text{time} \times \text{correction factor})$$

Parts per million (ppm) is then converted to parts per billion (ppb).

Chemicals for fish treatment are calculated and double checked for accuracy by at least two permanent personnel thoroughly trained in the administration of chemicals. All chemicals are mixed in the hatchery shop area away from hatchery flows. Any

chemical spills are contained and cleaned up immediately in a manner that it will not reach surface or groundwater of the state. All personnel are thoroughly trained in the containment and clean-up of chemical spills (see section on Personnel Training). In the event of a chemical spill, In short, the employees are taught to:

1. Stop continuing spills.
2. Contain the spill.
3. Incorporate MSDS for clean-up, handling, and disposal.
4. Immediately notify the Hatchery Manager.
5. Use provided appropriate safety equipment to collect, remove, and dispose of chemical/material in a manner where it will not reach surface or ground waters of the state of Idaho and consistent with Idaho Administrative Code IDAPA 58.01.02.
6. If the spill reaches surface waters the hatchery manager will be notified immediately who in turn will notify his superiors within the IDFG. Then, within 24hrs, the EPA and IDEQ will be notified orally and within 5 days notified in writing. This notification will include the date, time and name of the chemical as well as the amount discharged.

Chlorine is used as a fish hauling tank disinfectant only. On a sunny day, truck tanks are filled to capacity with water. They are then driven to a location near the mortality pit (100 feet above and downstream of the settling basin and 200 yards from the nearest well and Clark Fork River). Chlorine is then added to the tanks at a 200 ppm concentration and exterior surfaces are brushed down. The trucks are parked and not moved for at least 1 hour. After disinfecting, any remaining chlorine is neutralized by adding 6 grams of sodium thiosulfate for each gallon of chlorine solution used. The neutralized water is then discharged onto the ground at this same location. The tanks are then refilled with fresh water and then rinsed out at this same dumping location.

### **Structural Maintenance of Facility**

The hatchery facility and all of its components (ie plumbing, incubation units, raceways, baffles, screens, tailboxes, standpipes, drains, diversion box, and settling basin) are inspected on a daily basis as part of the hatchery routine. All hatchery employees are trained in the daily hatchery routine. Part of this training includes the daily inspection of the hatcheries structural components. This training is performed by the hatchery manager or other qualified hatchery employees. Any maintenance or repairs are reported to the hatchery manager on a timely basis. All essential repairs are performed as soon as possible.

### **Personnel Training**

Cabinet Gorge Hatchery personnel will receive on-the-job training from the Fish Hatchery Manager or other qualified CGFH staff. This will include training in spill prevention and clean-up and disposal of spilled materials as well as training on the proper inspection of fish rearing units and the settling pond. This training will be documented in a training log located in the hatchery office. The log will contain the type of training, the date it occurred and the personnel that attended. Employees will also be required to read and understand the QA Plan and the BMP Plan for the CGFH facility

(see Appendix A for the signatory page). As necessary, the Fish Hatchery Manager may conduct special staff meetings or training sessions to discuss compliance monitoring in greater detail.

### **Disposal of Bio-solids**

When bio-solid disposal becomes necessary, the sludge and slurry will have to be hydraulically pumped. Due to the porous nature of the soil, the settling basin has a HDPE liner covered with six inches of sand as the pond bottom. In 2014, the liner of our settling basin was replaced and all prior bio-solids were removed and disposed of off-site in accordance with IDAPA 02.02.17 and IDAPA 58.01.02. This was pre-approved by Idaho DEQ.

### **Drug and Pesticide Use, Reporting of INADs and Extra-label Use**

No pesticides are used around water because of the possible toxicity to the fish. All drugs and pesticides will be used in accordance with applicable label directions. As required by the NPDES permit, records are kept for all drug and chemical usage, including the use of medicated diets. Some medicated diets also require INAD paperwork, which is sent to the appropriate parties and copies are retained on station. Medicated diets are separated from normal diets and used as recommended according to established INAD protocols. Extra label drug use will be used according to directions prescribed by the veterinarian.

### **Record Keeping:**

In order to calculate feed conversion ratios hatchery staff retains records of feed fed, number of fish on hand and records of fish weight. Daily feed fed is recorded on feed sheets and totaled at the end of the month. The number of fish on hand is obtained from the initial incoming egg number minus monthly mortalities. Pound counts are performed to determine an average weight on a monthly basis.

Records of cleaning are documented daily on the vat mortality sheets located at each of the rearing units. Structural inspections are done daily during cleaning. Records of the amounts of feed fed, number of fish on hand, conversion ratios are kept within the hatchery office. Inventory of chemicals dispensed are kept on daily chemical use sheets and summarized in the annual report.. All records are available upon request by contacting the facility manager.

### **Copper Use**

Chelated copper compounds and copper sulfate are not used at CGFH. If conditions warrant and copper compounds are prescribed for use, their application and use will follow general permit guidelines.

### **PCB Release**

Cabinet Gorge Hatchery does not have any known sources that contain PCB's.

### **Transgenic and Non-Native Species**

No transgenic species are reared at CGFH and no non-native fish or eggs are produced without a current permit.

## APPENDIX A

## Signatory Page

I have read and understand this Best Management Practices plan  
for  
Cabinet Gorge Hatchery

[illegible]



## Idaho Aquaculture Best Management Practices Plan (BMP Plan)

### Certification

Facility Name: Cabinet Gorge Fish Hatchery

NPDES Permit Number: IDFG-131001

The BMP Plan is complete and is available upon request to EPA and IDEQ.

The BMP Plan is being implemented by trained employees.

The BMP Plan has been reviewed and endorsed by the facility manager.

The individuals responsible for implementation of the BMP Plan have been properly trained.

*"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

Signature:



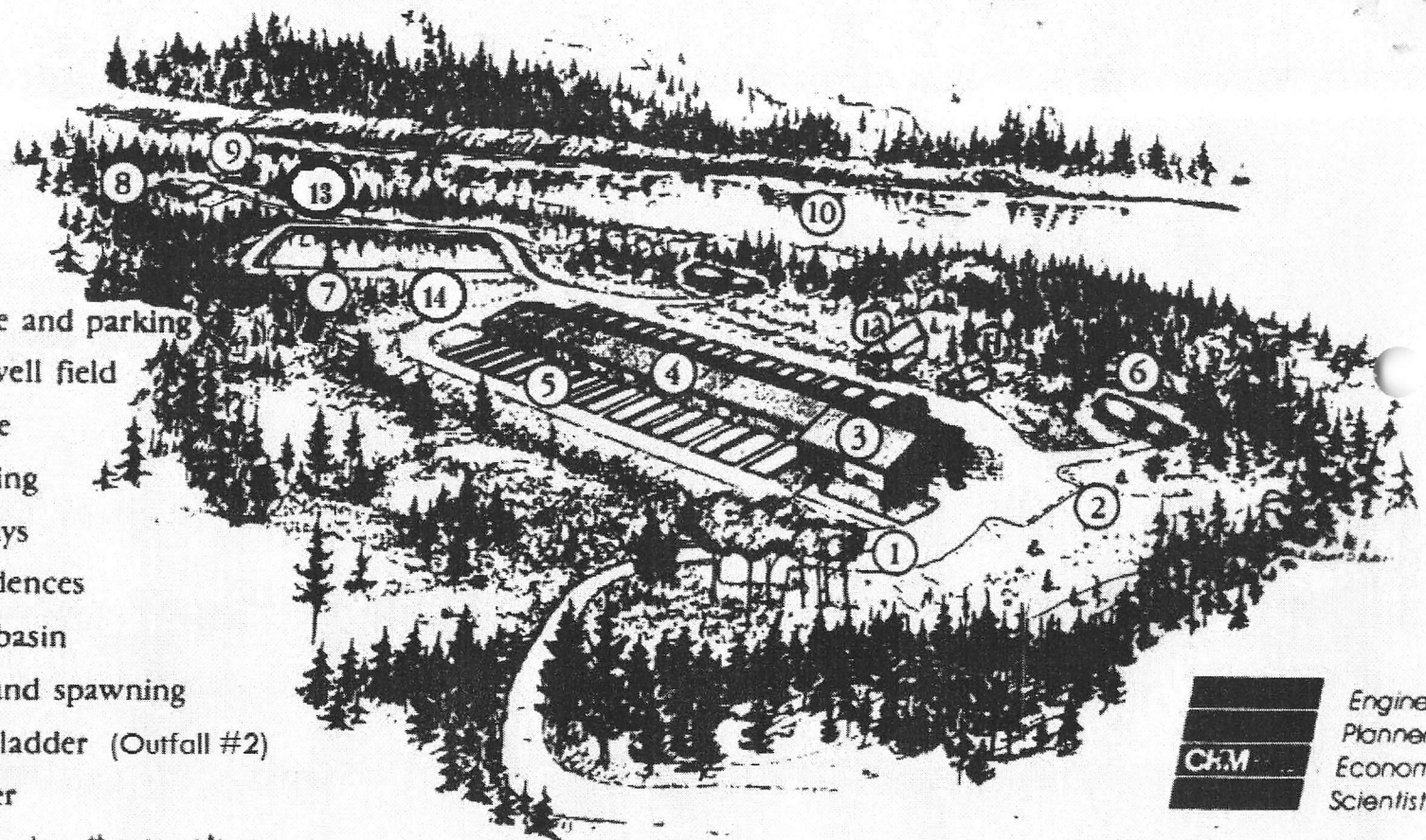
Title/Company Idaho Fish & Game

Print Name: John D Rankin

Date: 12/1/2017

An existing discharger must submit this certification within 90 days of the effective date of this permit. For a new permittee, this certification must be submitted no later than the written Notice of Intent to be covered under this permit. The certification must be submitted to EPA and to the responsible IDEQ office (§I.C.1 of the permit).

- ① Visitor entrance and parking
- ② Water supply well field
- ③ Shop and office
- ④ Hatchery building
- ⑤ Outside raceways
- ⑥ Operator's residences
- ⑦ Sedimentation basin
- ⑧ Adult holding and spawning
- ⑨ Adult trap and ladder (Outfall #2)
- ⑩ Clark Fork River
- ⑪ Back-up Generator #2 building
- ⑫ Feed storage building
- ⑬ Main Hatchery Discharge (Outfall #1)
- ⑭ Cutthroat Raceways



Engineer  
Planner  
Econom  
Scientists

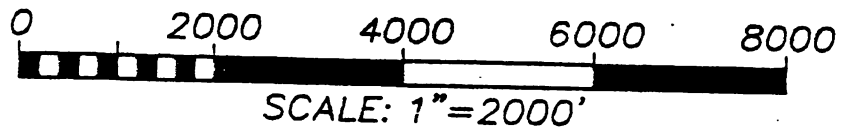
CH2M

Figure 4. Cabinet Gorge Hatchery facility overview (CH2M Hill).

T 55 N, R 3 E, S 28 NE  $\frac{1}{4}$ , SE  $\frac{1}{4}$



## VICINITY MAP



SCALE: 1"=2000'

